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**Section II (Remarks)****Application Status and Petition for Extension of Time**

In the present application, an October 3, 2005 Office Action finally rejected claims 1-11 and 23-24. Applicant filed a Response to the October 3, 2005 Office Action on January 11, 2006. A February 3, 2006 Advisory Action indicated that Applicant's January 11, 2006 Response was entered for purposes of appeal, but that the Response did not place the application in condition for allowance.

The February 3, 2006 Advisory Action set a period for reply as three (3) months from the mailing date (October 3, 2005) of the final rejection, such reply date being January 3, 2006. Applicant hereby requests a 3-month extension of time under 37 C.F.R. 1.136(a), thus extending the time for responding to the October 3, 2005 Office Action to April 3, 2006. Payment of the \$1,020.00 fee under 37 CFR 1.17(a)(3) is authorized in the enclosed Credit Card Form (PTO-2038).

**Claim Rejections**

- claims 1-11 and 23-24 were rejected under 35 USC 112, first paragraph, as failing to comply with the written description requirement as purportedly containing new matter, with four specific rejections premised on (a) the limitation "containing at least one of boron, aluminum, and titanium" in claims 1, 23, and 24; (b) the "proviso" limitation in claims 1, 23, and 24; (c) the "anhydrous silica" limitation of claim 11; and (d) the "pressurized" limitation of claims 23 and 24;
- claims 1-8, 11, and 23-24 were rejected under 35 USC 103(a) as obvious over Bergkvist in view of Achikita et al.;
- claims 1-8, 11, and 23-24 were rejected under 35 USC 103(a) as obvious over DE 19815087 in view of Tanaka et al.;
- claims 1-11 and 23-24 were rejected under 35 USC 103(a) as obvious over JP 2002-256255 in view of Bergkvist;
- claims 1-11 and 23-24 were rejected under 35 USC 103(a) as obvious over JP 2001-009727 in view of Magnusson et al. and Bergkvist;

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- claims 1-11 and 23-24 were rejected under 35 USC 103(a) as obvious over either (1) JP 2002-114968 or (2) JP 2001-122644 both in view of Bergkvist;
- claims 9-10 were rejected under 35 USC 103(a) as obvious over DE 19815087 in view of Tanaka et al. as applied to claim 1 and further in view of either (1) JP 2002-256255, (2) JP 2001-009727, or (3) Kydd;
- claims 1-11 and 23-24 were rejected under 35 USC 103(a) as obvious over either (1) JP 2002-114968 or (2) JP 2001-122644 both in view of Bergkvist, as applied to claim 1 and further in view of either (1) JP 2002-256255, (2) JP 2001-009727, or (3) Kydd.
- claims 1-8, 11 and 23-24 were rejected under 35 USC 103(a) as obvious over Bergkvist in view of Sridhar et al. and Achikita et al.
- claims 9-10 were rejected under 35 USC 103(a) as obvious over Bergkvist in view of Sridhar et al. and Achikita et al. as applied to claim 1 and further in view of DE 19815087 and at least one of (1) JP 2002-256255, (2) JP 2001-009727, or (3) Kydd.

In the February 3, 2006 Advisory Action, two of the four rejections under 35 USC 112, first paragraph – namely, (c) the “anhydrous silica” limitation of claim 11; and (d) the “pressurized” limitation of claims 23 and 24 – were withdrawn. Advisory Action, page 1, item number 5.

All of the remaining rejections under 35 USC §§ 112, 112, and 103 discussed in the October 3, 2005 Office Action were sustained. Such rejections are traversed as detailed below. Reconsideration of the patentability of claims 1-11 and 23-24 is requested, in light of the ensuing remarks.

**A. Rejections Under 35 USC § 112, First Paragraph**

*1. Law Regarding Rejections Under 35 USC § 112, First Paragraph*

*a. Enablement*

The enablement requirement ensures that the specification and a patent teach those skilled in the art how to make any use the full scope of the claimed invention without undue experimentation. *Genentech, Inc. v. Novo Nordisk, A/S*, 108 F.3d 1361, 1365 (Fed. Cir. 1997). The first paragraph of Section 112 requires nothing more than objective enablement. *In re Wright*, 999 F.2d 1557,

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1561, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993) (emphasis added). The scope of enablement must only bear a “reasonable correlation” to the scope of the claims. *In re Fisher*, 427 F.2d 833, 839, 16 USPQ 18, 24 (CCPA 1970). The fact that some experimentation is necessary does not preclude enablement; what is required is that the amount of experimentation “must not be unduly extensive.” *Atlas Powder Co., v. E.I. DuPont de Nemours & Co.*, 224 USPQ 409, 413 (Fed. Cir. 1984). The Patent and Trademark Office Board of Appeal cogently summarized the point when it stated:

“The test is not merely quantitative, since a considerable amount of experimentation is permissible, if it is merely routine, or if the specification in question provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed to enable the determination of how to practice a desired embodiment of the invention claimed.” *Ex parte Jackson*, 217 USPQ 804, 807 (1982) (emphasis added).

Whenever the Patent Office asserts that the enabling disclosure is not commensurate in scope with the scope of protection sought by the claims, it is incumbent on the Office to establish a *prima facie* case of lack of enablement. *In re Armbruster*, 512 F.2d 676, 185 USPQ 152 (CCPA 1975); *In re Marzocchi*, 439 F.2d 220, 169 USPQ 367 (CCPA 1971). To meet the burden of proof, the Examiner must advance acceptable reasoning inconsistent with enablement. *In re Straheilevitz*, 668 F.2d 1229, 1232, 212 USPQ 561, 563 (CCPA 1982); *In re Wright*, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993).

Claims are to be given their broadest reasonable interpretation that is consistent with the specification. MPEP 2164.08. “That claims are interpreted in light of the specification does not mean that everything in the specification must be read into the claims.” *Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 957, 220 USPQ 592, 597 (Fed. Cir. 1983), cert. denied, 469 U.S. 835 (1984) (emphasis added). Limitations and examples in the specification do not generally limit what is covered by the claims. MPEP 2164.08. Section 112, first paragraph, does not require a specific example of everything within the scope of a broad claim. *In re Gay*, 50 CCPA 725, 309 F.2d 769, 135 USPQ 311 (1962). Indeed, it is impermissible for the Patent Office to limit all claims to specific examples provided in a specification. *In re Anderson*, 176 USPQ 331, 333 (CCPA 1973)(citing *American Anode, Inc. v. Lee-Tex Rubber Products Corp.*, 136 F.2d

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581, 585, 58 USPQ 7, 11 (7th Cir. 1943) and *Smith v. Snow*, 294 U.S. 1 [at pages 11 et seq.], 24 USPQ 26, 30).

The written description requirement does not require a patent applicant "to describe exactly the subject matter claimed, [instead] the description must clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." *In re Gosteli*, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989).

The technical field and the completeness of understanding of that field dictate the scope of enablement required to enable broad patent claims under 35 USC § 112. As noted by the predecessor court to the Federal Circuit:

[T]he first paragraph of 35 U.S.C. 112 ... requires that the scope of the claims must bear a **reasonable correlation** to the scope of enablement provided by the specification to persons of ordinary skill in the art. **In cases involving predictable factors, such as mechanical or electrical elements, a single embodiment provides broad enablement** in the sense that, once imagined, other embodiments can be made without difficulty and their performance characteristics predicted by resort to known scientific laws. **In cases involving unpredictable factors, such as most chemical reactions and physiological activity, the scope of enablement obviously varies inversely with the degree of unpredictability of the factors involved.**

*In re Fisher*, 427 F.2d 833, 166 USPQ 18, 24 (CCPA 1970). This is consistent with multiple cases discussed in MPEP section 2164.08 (8<sup>th</sup> Ed., Rev. Oct. 2005) – the **majority of cases in which the disclosure was held to be insufficient to enable the scope of the claims involved biotechnologies and complex chemical reactions**. See, e.g., *In re Vaeck*, 947 F.2d 488, 495, 20 USPQ2d 1438, 1444 (Fed. Cir. 1991)<sup>1</sup>; *Amgen v. Chugai Pharm. Co.*, 927 F.3d 1200, 18 USPQ2d 1016 (Fed. Cir.), *cert. denied*, 502 U.S. 856 (1991)<sup>2</sup>; *In re Wright*, 999 F.3d 1557, 1562, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993)<sup>3</sup>; *In re Goodman*, 11 F.3d 1046, 1052, 29

<sup>1</sup> (section 112, first paragraph rejection sustained as to claims for **genetic engineering techniques for producing proteins toxic to mosquito and black fly larvae**, in view of relatively incomplete understanding of biology of cyanobacteria as of applicants' filing date and limited disclosure by applicants of particular cyanobacterial genera operative in claimed invention)

<sup>2</sup> (section 112, first paragraph rejection sustained as to claims directed to a **purified DNA sequence encoding polypeptides that are analogs of erythropoietin (EPO)** where only a few EPO analog genes were disclosed but claims encompassed all analogs of EPO without disclose of other genetic sequences and how to make them)

<sup>3</sup> (section 112, first paragraph rejection sustained as to claims for **live non-pathogenic vaccines and processes for making same to elicit immunoprotective activity in any animal toward any RNA virus**

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USPQ2d 2010, 2015 (Fed. Cir. 1993)<sup>4</sup>; *In re Fisher*, 427 F.2d 833, 839, 166 USPQ 18, 23-24 (CCPA 1970)<sup>5</sup>.

Restating a pertinent portion of the excerpt provided above, a **two-part test for determining if an embodiment provides sufficient support for broad claims directed to mechanical elements is whether:**

- (1) other embodiments may be made without difficulty; and**
- (2) the performance of such other embodiments may be predicted by applying known scientific laws.**

*In re Fisher*, 166 USPQ at 23-24 (CCPA 1970).

*b. Range Limitations and New Matter*

In written description cases, "[t]he **primary consideration is factual and depends on the nature of the invention and the amount of knowledge imparted to those skilled in the art by the disclosure.**" *In re Wertheim*, 541 F.2d 257, 262, 191 USPQ 90, 96 (CCPA 1976) (emphasis added). In order to comply with the written description requirement, the specification "need not describe the claimed subject matter in exactly the same term as used in the claims; it must simply indicate to persons skilled in the art that as of the [filing] date the applicant had invented what is now claimed." *Eiselstein v. Frank*, 52 F.3d 1035, 1038, 34 USPQ2d 1467, 1470 (Fed. Cir. 1995). The failure of the specification to specifically mention a limitation that later appears in

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in view of disclosure of only a single working example directed to a uniquely tailored *in vitro* method of producing a particular recombinant virus vaccine)

<sup>4</sup> (section 112, first paragraph rejection sustained as to claims for **producing mammalian peptides in plant cells** where specification contained was limited to producing gamma-interferon in a dicot species, and the evidence supported a need for extensive experimentation to encode mammalian peptide into a monocot plant at the time of filing)

<sup>5</sup> (section 112, first paragraph rejections sustained for (1) claims covering substantially all **adrenocorticotrophic hormones (ACTH) preparations**, whether produced synthetically or by breakdown of 39 amino acid peptides, to form a polypeptide containing any number of the amino acids **for therapeutic use so long as the product exhibits the threshold activity without side effects** where the application taught only the production of 39 amino acid ACTH; and (2) claims covering products having potency (therapeutic activity) greater than 230% of the 1 International Unit standard where such potencies were not obtainable from the disclosure's teachings plus ordinary skill (with the Court specifically noting that the problem was not analogous to the context of *substantially pure* compositions due to the small or nonexistent range of possible further purification))

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the claims is not a fatal one when one skilled in the art would recognize upon reading the specification that the new language reflects what the specification shows has been invented. *All Dental Prodx LLC v. Advantage Dental Prods., Inc.*, 309 F.3d 774, 64 USPQ2d 1945, 1948 (Fed. Cir. 2002)

Describing a product in terms of its properties, without requiring identification of chemical components, does not run afoul of the written description requirement. For example, the Federal Circuit has held that gasoline compounds **described solely by their chemical properties** satisfies the written description requirement.<sup>6,7</sup> *Union Oil Co. of California v. Atlantic Richfield Co.* ["ARCO"], *et al.*, 208 F.3d 989, 54 USPQ2d 1227 (Fed. Cir. 2000). In response to ARCO's assertion that the specification failed to describe the exact chemical component of each claimed combination of the '393 patent, the Federal Circuit noted that the **written description requirement does not require the applicant to describe exactly the subject matter claimed**. Instead, the key inquiry is whether the description clearly allows persons skilled in the art to recognize that applicant invented what is claimed, citing *In re Hayes Microcomputer Prods., Inc.*<sup>8</sup>, 982 F.2d 1527, 1533, 25 USPQ2d 1241, 1245 and *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991) ("**ranges found in applicant's claims need not correspond exactly to those disclosed in [the specification]**"; issue is whether one skilled in the art could derive the claimed ranges from the [ ] disclosure."). This is in agreement with the MPEP, which states:

With respect to changing numerical range limitations, changes to the scope of the claims must take into account which ranges one skilled in the art would consider inherently supported by the discussion in the original disclosure.

MPEP 2163.05.

<sup>6</sup> Citing *In re Gosteli*, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989).

<sup>7</sup> See, e.g., claim 1 of U.S. Patent No. 5,288,393 that was upheld in *Union Oil Co. of California*:

1. An unleaded gasoline fuel, suitable for combustion in an automotive engine having the following properties:
  - (1) a 50% D-86 distillation point no greater than 205.degree. F.; and
  - (2) a Reid Vapor Pressure less than 7.5 psi.

<sup>8</sup> "[The applicant] does not have to describe exactly the subject matter claimed." *In re Hayes Microcomputer*, 982 F.2d at 1533, 25 USPQ2d at 1245.

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Delimiting a range between a broader range or genus of disclosed values is permissible, even without identity between endpoint values. For example, in the decision in *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976), the ranges described in the original specification included a range of "25%- 60%" and specific examples of "36%" and "50%." A corresponding new claim limitation to "between 35% and 60%" did meet the description requirement – notwithstanding the lack of agreement between the "36%" value listed in the specific example and the "35%" lower limit recited in the claim.

Similarly, there is **no prohibition under Section 112 against reciting open-ended parametric ranges** in patent claims. See, e.g., *Ralston Purina Co. v. Far-Mar-Co., Inc.*, 772 F.2d 1570, 227 USPQ 177, 180 (Fed. Cir. 1985) (upholding finding of adequate support for open-ended claim limitations as to temperatures "in excess of 212 F" and "substantially above 212 F," and as to moisture levels of "at least about 25% by weight" and "at least 25% by weight").

## 2. Traversal of Rejections Under 35 USC § 112, First Paragraph

### *a) Purported new matter - "containing at least one of boron, aluminum, and titanium" limitation in claims 1, 23, and 24*

In the October 3, 2005 Office Action, , the examiner opined that the limitation "containing at least one of boron, aluminum and titanium" added to claims 1, 23, and 24 was much broader than what was disclosed in the specification, and rejected the claims under 35 USC § 112, first paragraph. Although the rejection was expressly phrased in terms of "new matter," the language of the rejection, i.e., "broader in scope than the disclosure," is suggestive of a lack of enablement rejection. For this reason, arguments are provided below to address both of the interrelated concepts of "new matter" and "enablement" under 35 U.S.C. 112, first paragraph.

Starting with the issue of "new matter," it is clear that the specification need not describe the claimed subject matter in exactly the same term as used in the claims; so long as it indicates to persons skilled in the art that the applicant had invented the subject matter of the claims by the effective [e.g., filing] date. *Eiselstein*, 34 USPQ2d 1467 at 1470, *supra*. With regard to the instant "containing at least one of boron, aluminum, and titanium" limitation in claims 1, 23, and 24, there is no doubt – and it is not contested by the examiner, that "at least one of boron,

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aluminum, and titanium” was disclosed; rather, the present rejection is **tantamount to stating that a chemical component must be recited in a particular amount in a patent claim if the chemical component is to be claimed at all.** In each of claims 1, 23, and 24, specific amounts of boron, aluminum, and/or titanium are not required to delimit the subject matter of the claims and distinguish the prior art; rather, the mere presence of at least one of these metals coupled with other claim limitations suffices on both fronts. For example, claim 1 recites ranges for specific gravity, average particle diameter, particle size, and hardness along with the silicon-related proviso clause; claim 23 recites various method steps along with the silicon-related proviso clause, and claim 24 combines parametric range and method step recitations of both claims 1 and 23. The examiner’s extrapolation of disclosure provided in the examples of the present application of specific amounts of boron, aluminum, and titanium in the specification to suggest that the invention *cannot be claimed* outside of these specific amounts defies both law or reason. See, e.g., MPEP 2164.08 (limitations and examples in the specification do not generally limit what is covered by the claims).

Moreover, the Federal Circuit has held that describing a product in terms of its properties, without requiring identification of chemical components, does not run afoul of the written description requirement. *Union Oil Co. of California v. Atlantic Richfield Co.* [“ARCO”], et al., 208 F.3d 989, 54 USPQ2d 1227 (Fed. Cir. 2000). Extending the holding of *Union Oil* to the present application, **if claims lacking identification or amount of chemical components pass muster in terms of written description, providing chemical component identification must also pass muster even if component amounts are not recited with specificity as claim limitations.** The examiner’s statement that the claims are “inconsistent with the teachings of the specification” for failing to recite specific component amounts where best mode amounts *were* recited in the specification is ludicrous. Such an idea if taken to its logical extreme would suggest that patent applicants would be better to disclose “all the elements of the periodic table and compounds thereof in amounts between 0 and 100 percent” or to simply avoid disclosure of any specific amount of a particular element. Clearly this would turn the best mode requirement on its head and present an unworkably vague patent regime. In view of the foregoing, the new matter rejection is insupportable and should be withdrawn.



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Turning to the issue of enablement, in support of the present rejection, the examiner reasoned that:

**Although the specification states that these components can be present, these components are present in specific amounts. Since the claims do not define the amount of these components it is broader in scope than the disclosure.**

October 3, 2005 Office Action, page 2. This reasoning is insufficient to support a *prima facie* case of enablement.

MPEP 2164.08, entitled "Enablement Commensurate in Scope With the Claims," provides both that "[c]laims are to be given their broadest reasonable interpretation that is consistent with the specification," and that "[l]imitations and examples in the specification do not generally limit what is covered by the claims." See also *In re Anderson*, 176 USPQ 331, 333 (CCPA 1973).

Claims 1, 23, and 24 require the presence of any of boron, aluminum and titanium. The examiner concedes that **"this specification states that these components [i.e., boron, aluminum and titanium] can be present."** October 3, 2005 Office Action, page 2. The examiner's further suggestion that the presence of boron, aluminum and titanium in the claims **must be limited** to the amounts provided in the specification clearly runs afoul of the prohibition against such limitation stated in *In re Anderson*, 176 USPQ 331, 333 (CCPA 1973) – that the Patent Office cannot limit all claims to specific examples provided in a specification. **The examiner points to no teaching or suggestion in the disclosure – and to no legal authority – that the presence of boron, aluminum and titanium should be limited to any upper value.** Instead, the examiner has conjured this limitation out of thin air. Such conjuring is impermissible.

There is no question raised as to the fact that there are specific examples of what appears to be the preferred embodiment and best mode contemplated by the applicant of carrying out his claimed invention; we are here dealing only with a possible alternative embodiment within the scope of the claims. What the Patent Office is here apparently attempting is to limit all claims to the specific examples, notwithstanding the clear disclosure of a broader invention.

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The mechanical nature of the technology embodied in claims 1, 24, and 25 calls for application of the two-part test of *In re Fisher* (166 USPQ at 23-24) to determine the suitability of the enablement for the claims according to Section 112, first paragraph. The first prong, whether “other embodiments may be made without difficulty” is clearly satisfied here to increase the amounts of boron, aluminum, or titanium into the ranges deemed objectionable by the examiner. With the benefit of the present patent disclosure, it would be a trivial exercise for any skilled artisan to modify the amounts of any of boron, aluminum, and titanium in the feedstock to manufacture the abrasives as claimed. Likewise, second prong of the *In re Fisher* test, “whether the performance of such other embodiments may be predicted by applying known scientific laws,” is also satisfied here. With the benefit of the present patent disclosure, any skilled artisan could easily modify the amounts of any of boron, aluminum, and titanium as desirable to produce abrasive powders as claimed. Regarding the specific gravity and hardness ranges specified in claims 1, 23, and 24, for example, such parameters are quantified for all stable elements of the periodic table in various scientific and engineering textbooks. By applying this widely available information and known scientific laws, one skilled in the art could easily predict the properties and performance of abrasives according to other embodiments within the scope of claims 1, 24, and 25.

Based on the foregoing, no new matter has been added to the claims within the meaning of 35 USC. 112, and the examiner has not advanced acceptable reasoning inconsistent with enablement sufficient to establish a *prima facie* case of a lack of enablement. Therefore, withdrawal of the present rejection under 35 USC § 112 is respectfully requested.

*b) Purported new matter - “proviso” limitation in claims 1, 23, and 24*

The examiner has rejected claims 1, 23, and 24 for containing the “proviso” limitation, calling the proviso “new matter” as not being supported in any one example. E.g., October 3, 2005 Office Action, page 2. The examiner posits, without any legal support whatsoever, “it is improper to combine examples to make up a claimed limitation.” October 3, 2005 Office Action, page 5. The undersigned is unfamiliar with the source of this statement in the MPEP or case law. Applicant AGAIN challenges the examiner to provide support for this bare proposition, and absent a showing of such support, earnestly requests that this rejection be withdrawn. Applicant respectfully requests that such challenge not be ignored a second time.

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In addition to the legally unsupportable “combining examples” objection, the examiner makes two further “new matter” objections relating to the proviso clause of claims 1, 23, and 24. First, the examiner protests that the only example teaching titanium in the absence of boron and aluminum is comparison 5, but that the amount of silicon defined in the same comparison is 0.8 percent. October 3, 2005 Office Action, page 2. Second, the examiner protests that the amount of silicon defined in the tables range from 0.7 to 1.4%, thus the amount of “at least 0.7 wt.% as claimed is much broader than was disclosed in the specification” as implying any and all amounts of 0.7 and above for this component. October 3, 2005 Office Action, pages 2-3. Neither objection is proper here.

It is worth reiterating the idea repeatedly articulated by the Federal Circuit that the **written description requirement does not require the applicant to describe exactly the subject matter claimed**; instead the key inquiry is whether the description clearly allows persons skilled in the art to recognize that applicant invented what is claimed. *Union Oil Co, supra*. **Dellimiting a range between a broader range or genus of disclosed values is permissible, even without identity between endpoint values.** See, e.g., *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976) (*supra*). There is no doubt that “0.7 % silicon” was disclosed in the specification; the examiner’s first protest is that comparison 5 used the value of “0.8% silicon.” The lack of identity between comparison 5 and other disclosed examples is of no import, as identity of endpoint values between disclosed endpoints is not required (see *In re Wertheim, supra*, in which the Federal Circuit upheld the validity of a claim reciting “between 35% and 60%” despite disclosure of a range of 25%-60% and specific examples of 36% and 50% - representing a 1% variation at the lower extremity, the same variation as provided in the instant case.).

With regard to the open-ended recitation of “at least 0.7 wt. %,” there is no prohibition under Section 112 against reciting open-ended parametric ranges in patent claims. See, e.g., *Ralston Purina Co., supra*, (upholding finding of adequate support for open-ended claim limitations as to, for example, temperatures “in excess of 212 F” and “t” and “at least 25% by weight”). The examiner concedes that a range of values between 0.7 % and 1.4% was disclosed in Applicant’s specification (October 3, 2005 Office Action, page 2). Recitation of “at least 0.7 wt %” is

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entirely consistent with the range of values greater than 0.7 wt % recited in Applicant's specification, and is not objectionable under applicable Federal Circuit precedent.

As noted previously, "[l]imitations and examples in the specification do not generally limit what is covered by the claims." MPEP 2164.08. **The Patent Office cannot limit all claims to specific examples provided in a specification.** *In re Anderson*, 176 USPQ 331, 333 (CCPA 1973). Yet that is exactly what the examiner has attempted to do again here – to read a silicon range (0.7 to 1.4 wt%) *from one operative example* and draw an inference that silicon ranges greater than 1.4 wt% could not be employed. In the absence of a clear teaching or disclaimer that silicon in amounts greater than 1.4 wt % would not be operative, the mere inclusion of the 1.4 wt% in one example of the description is not a sufficient basis for limiting the claims.

Moreover, with regard to enablement Applicants hereby incorporate by reference the preceding discussion of the two-part test of *In re Fisher* (166 USPQ at 23-24) as applied to claims 1, 24, and 25. There is no doubt that, with the benefit of the present patent disclosure, one of ordinary skill in the art could: (1) make embodiments with silicon weight percentages above 1.4 wt% without difficulty; and (2) predict the performance of such other embodiments applying known scientific laws.

Based on the foregoing, no new matter has been added to the claims within the meaning of 35 USC. 112, and the examiner has not advanced acceptable reasoning inconsistent with enablement sufficient to establish a *prima facie* case of a lack of enablement. Therefore, withdrawal of the present rejection under 35 USC § 112 is respectfully requested.

## **B. Rejections Under 35 USC § 103**

### 1. Law Regarding Rejections Under 35 USC § 103

Concerning §103 obviousness rejections, three requirements must be met for a *prima facie* case of obviousness. First the prior art reference(s) must teach all of the limitations of the claims. M.P.E.P. § 2143.03. Second, there must be a motivation to modify the reference or combine the teachings to produce the claimed invention. M.P.E.P. § 2143.01. Third, a reasonable

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expectation of success is required. M.P.E.P. § 2143.02. In addition, the teaching or suggestion to combine and the expectation of success must both be found in the prior art and not based on applicant's disclosure. M.P.E.P. § 2143.

**In addition, a basic consideration, which applies to all obviousness rejections, is that references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination. MPEP 2141.02.**

A showing of the suggestion teaching or motivation to combine the prior art references is an essential component of an obviousness holding. *See, e.g., Brown & Williamson Tobacco Corp. v. Phillip Morris Inc.*, 229 F.3d 1120, 11424-25, 56 USPQ2d 1456, 1459 (Fed. Cir. 2000). There must be some motivation and suggestion or teaching of the desirability of making the specific combination that was made by the applicant. *In re Dance*, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998); MPEP 2141.02. *See also In re Fine*, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988) ("teaching of references can be combined *only* if there is some suggestion or incentive to do so.") (emphasis in original). Specificity is required: "[p]articular findings must be made as to the reason the skilled artisan with no knowledge of the claimed invention would have selected these components for combination in the manner claimed." *In re Kotzab*, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed Cir. 2000).

"A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984)." (emphasis in original; MPEP 2141.02).

Non-analogous art may only be combined under specific circumstances to support an obviousness rejection. As stated by the court in *In re Oetiker*, 24 U.S.P.Q.2d 1443, 1445 (Fed. Cir. 1992),

"[i]n order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either [1] be in the field of applicant's endeavor or, if not, then [2] be reasonably pertinent to the particular problem with which the inventor was concerned." (Numbers added for clarity.)

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In determining whether prior art is “reasonably pertinent to the particular problem with which the inventor was concerned,” the intended use is important and should under the circumstances be considered for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used. See MPEP 2173.05(g).

2. Traversal of Rejections Under 35 USC § 103

*a) Patentability of Claims 1-11, 23 and 24 over the Reference Combinations Applied in the § 103 Rejections of Such Claims*

Applicant’s claimed invention, as broadly recited in amended independent claim 1 requires an abrasive composition that includes “an inorganic metal powder that contains at least one of boron, aluminum and titanium, ... with the proviso that when the inorganic metal powder contains titanium in the absence of boron and aluminum, the inorganic metal powder further contains silicon in an amount of at least 0.7 wt%.”

Since claims 2-11 depend directly or indirectly from claim 1, such claims also require “an inorganic metal powder that contains at least one of boron, aluminum and titanium... with the proviso that when the inorganic metal powder contains titanium in the absence of boron and aluminum, the inorganic metal powder further contains silicon in an amount of at least 0.7 wt%.”

The remaining independent claims 23 and 24 likewise recite compositions containing at least one of boron, aluminum and titanium, subject to the same proviso concerning titanium.

Furthermore, the claims specify that the abrasive meets all of the following conditions:

- (1) its true specific gravity is 4 g/cm<sup>3</sup> or more;
- (2) its average particle diameter is from 5 µm to 50 µm inclusive;
- (3) its maximum particle size is 100 µm or less;
- (4) its hardness (H<sub>MV</sub>) is from 110 to 340 inclusive.

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Each of these conditions confers an important benefit to the resulting abrasive composition. A high specific gravity and particle size between 5 and 50  $\mu\text{m}$  confers excellent grinding power. Application, page 9, lines 10-14. Ensuring that the maximum particle size is 100  $\mu\text{m}$  or less promotes suitable grinding power while avoiding potential clogging problems such as in nozzles or crevices. Application, page 10, lines 1-5. If the hardness of the abrasive is low (e.g., below 110 HMV), then good grinding power cannot be expected. Application, page 9, lines 19-20. However, if the hardness of the abrasive is too high (e.g., above 340 HMV), then the abrasive may damage parts or objects other than the target to be ground. Application, page 7, lines 11-12.

**No such composition is taught or suggested by the combinations of references that have variously been asserted against applicant's claims.**

The examiner's blanket sustenance of all of the various rejections of all claims 1-11, 23 and 24 without addressing the substance of Applicants' previously-submitted arguments is erroneous and unwarranted. Careful consideration of the arguments presented below is respectfully requested.

*a) Rejection of claims 1-8, 11, and 23-24 under 35 USC § 103(a) as obvious over Bergkvist in view of Achikita et al.*

In the February 3, 2006 Advisory Action, the examiner acknowledged that Bergkvist and Achikita do not teach the claimed proviso, and stated that the present rejection under Section 103 would be withdrawn upon presentation of clear evidence as to why the above-referenced limitations (as to "containing at least one of boron, aluminum, and titanium" and the proviso clause) are not "new matter" under Section 112, first paragraph. February 3, 2006 Office Action, page 4. Since clear evidence of the same has been provided hereinabove, it is respectfully requested that the rejection of claims 1-8, 11, and 23-24 under 35 USC § 103(a) as obvious over Bergkvist in view of Achikita et al be withdrawn.

To the extent that such rejection is not withdrawn, Applicant hereby reaffirms and incorporates by reference all of the arguments relating to the foregoing rejection under 35 USC § 103(a) made in the prior Response to Office Action filed on January 11, 2006.

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*b) Rejection of claims 1-8, 11, and 23-24 under 35 USC § 103(a) as obvious over DE 19815087 in view of Tanaka et al.*

In the February 3, 2006 Advisory Action, the examiner acknowledged that DE 19815087 and Tanaka do not teach the claimed proviso, and stated that the present rejection under Section 103 would be withdrawn upon presentation of clear evidence as to why the above-referenced limitations (as to “containing at least one of boron, aluminum, and titanium” and the proviso clause) are not “new matter” under Section 112, first paragraph. February 3, 2006 Office Action, page 4. Since clear evidence of the same has been provided hereinabove, it is respectfully requested that the rejection of claims 1-8, 11, and 23-24 under 35 USC § 103(a) as obvious over DE 19815087 in view of Tanaka be withdrawn.

To the extent that such rejection is not withdrawn, Applicant hereby reaffirms and incorporates by reference all of the arguments relating to the foregoing rejection under 35 USC § 103(a) made in the prior Response to Office Action filed on January 11, 2006.

*c) Rejection of claims 1-11 and 23-24 under 35 USC § 103(a) as obvious over JP 2002-256255 in view of Bergkvist*

In the February 3, 2006 Advisory Action, the examiner acknowledged that JP 2002-256255 and Bergkvist do not teach the claimed proviso, and stated that the present rejection under Section 103 would be withdrawn upon presentation of clear evidence as to why the above-referenced limitations (as to “containing at least one of boron, aluminum, and titanium” and the proviso clause) are not “new matter” under Section 112, first paragraph. February 3, 2006 Office Action, page 5. Since clear evidence of the same has been provided hereinabove, it is respectfully requested that the rejection of claims 1-11 and 23-24 under 35 USC § 103(a) as obvious over JP 2002-256255 in view of Bergkvist be withdrawn.

To the extent that such rejection is not withdrawn, Applicant hereby reaffirms and incorporates by reference all of the arguments relating to the foregoing rejection under 35 USC § 103(a) made in the prior Response to Office Action filed on January 11, 2006.

*d) Rejection of claims 1-11 and 23-24 under 35 USC § 103(a) as obvious over JP 2001-009727 in view of Magnusson et al. and Bergkvist*



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In the February 3, 2006 Advisory Action, the examiner acknowledged that JP 2001-009727, Magnusson, and Bergkvist do not teach the claimed proviso, and stated that the present rejection under Section 103 would be withdrawn upon presentation of clear evidence as to why the above-referenced limitations (as to "containing at least one of boron, aluminum, and titanium" and the proviso clause) are not "new matter" under Section 112, first paragraph. February 3, 2006 Office Action, page 6. Since clear evidence of the same has been provided hereinabove, it is respectfully requested that the rejection of claims 1-11 and 23-24 under 35 USC § 103(a) as obvious over JP 2001-009727 in view of Magnusson and Bergkvist be withdrawn.

To the extent that such rejection is not withdrawn, Applicant hereby reaffirms and incorporates by reference all of the arguments relating to the foregoing rejection under 35 USC § 103(a) made in the prior Response to Office Action filed on January 11, 2006.

*e) Rejection of claims 1-8, 11 and 23-24 under 35 USC § 103(a) as obvious over either (1) JP 2002-114968 or (2) JP 2001-122644 both in view of Bergkvist*

In the February 3, 2006 Advisory Action, the examiner acknowledged that JP 2002-114968, JP 2001-122644, and Bergkvist do not teach the claimed proviso, and stated that the present rejection under Section 103 would be withdrawn upon presentation of clear evidence as to why the above-referenced limitations (as to "containing at least one of boron, aluminum, and titanium" and the proviso clause) are not "new matter" under Section 112, first paragraph. February 3, 2006 Office Action, page 7. Since clear evidence of the same has been provided hereinabove, it is respectfully requested that the rejection of claims 1-8, 11, and 23-24 under 35 USC § 103(a) as obvious over JP 2002-114968 or JP 2001-122644, both in view of Bergkvist, be withdrawn.

To the extent that such rejection is not withdrawn, Applicant hereby reaffirms and incorporates by reference all of the arguments relating to the foregoing rejection under 35 USC § 103(a) made in the prior Response to Office Action filed on January 11, 2006.

*f) Rejection of claims 9-10 under 35 USC § 103(a) as obvious over DE 19815087 in view of Tanaka et al. as applied to claim 1 and further in view of either (1) JP 2002-256255, (2) JP 2001-009727, or (3) Kydd*

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In the February 3, 2006 Advisory Action, the examiner acknowledged that DE 19815087, Tanaka et al., JP 2002-256255, JP 2001-009727, and Kydd, do not teach the claimed proviso, and stated that the present rejection under Section 103 would be withdrawn upon presentation of clear evidence as to why the above-referenced limitations (as to “containing at least one of boron, aluminum, and titanium” and the proviso clause) are not “new matter” under Section 112, first paragraph. February 3, 2006 Office Action, page 8. Since clear evidence of the same has been provided hereinabove, it is respectfully requested that the rejection of claims 9-10 under 35 USC § 103(a) as obvious over DE 19815087 in view of Tanaka et al. as applied to claim 1 and further in view of either (1) JP 2002-256255, (2) JP 2001-009727, or (3) Kydd, be withdrawn.

To the extent that such rejection is not withdrawn, Applicant hereby reaffirms and incorporates by reference all of the arguments relating to the foregoing rejection under 35 USC § 103(a) made in the prior Response to Office Action filed on January 11, 2006.

*g) Rejection of claims 9-10 under 35 USC § 103(a) as obvious over either (1) JP 2002-114968 or (2) JP 2001-122644 both in view of Bergkvist, as applied to claim 1 and further in view of either (1) JP 2002-256255, (2) JP 2001-009727, or (3) Kydd*

In the February 3, 2006 Advisory Action, the examiner acknowledged that JP 2002-114968, JP 2001-122644, Bergkvist, JP 2002-256255, JP 2001-009727, and Kydd do not teach the claimed proviso, and stated that the present rejection under Section 103 would be withdrawn upon presentation of clear evidence as to why the above-referenced limitations (as to “containing at least one of boron, aluminum, and titanium” and the proviso clause) are not “new matter” under Section 112, first paragraph. February 3, 2006 Office Action, pages 8-9. Since clear evidence of the same has been provided hereinabove, it is respectfully requested that the rejection of claims 9-10 under 35 USC § 103(a) as obvious over either (1) JP 2002-114968 or (2) JP 2001-122644 both in view of Bergkvist, as applied to claim 1 and further in view of either (1) JP 2002-256255, (2) JP 2001-009727, or (3) Kydd, be withdrawn.

To the extent that such rejection is not withdrawn, Applicant hereby reaffirms and incorporates by reference all of the arguments relating to the foregoing rejection under 35 USC § 103(a) made in the prior Response to Office Action filed on January 11, 2006.

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*h) Rejection of claims 1-8, 11 and 23-24 under 35 USC § 103(a) as obvious over Bergkvist in view of Sridhar et al. and Achikita et al.*

The primary Bergkvist reference describes warm compacting of stainless steel powders having very low oxygen (<below 0.20 wt%), low silicon (< ~0.5 wt%) and carbon contents (<0.03 wt.%). Specifically disclosed compositions of Bergkvist include powder compositions containing, by weight %, 10-30% of chromium, 0-5% of molybdenum, 0-15% of nickel, 0-0.5% of silicon, 0-1.5% of manganese, 0-2% of niobium, 0-2% of titanium, 0-2% of vanadium, 0-5% of Fe<sub>3</sub>P, 0-0.4% graphite and at most 0.3% of inevitable impurities, and essentially no nickel or alternatively 7-10% of nickel. A lubricant, such as metal stearates, paraffins, waxes, natural and synthetic fat derivatives, and polyamides, may be added to the composition in amounts between 0.1 and 2.0% by weight of the total composition. Bergkvist has been cited for teaching stainless steel powder having a chromium content of 10-30%, in which titanium can be present in an amount of 0-2%.

Achikita et al. describes an **injection molding composition** composed of a sinterable powder comprising at least one metal or alloy and a binder containing from 10 to 80% by weight of a low-density polyethylene, from 10 to 80% by weight of a paraffin wax and from 5 to 35% by weight of a boric acid ester (e.g., triglycol diborates, trialkyl borates, glycerol borates and alkyl diborates), with the ratio of the sinterable powder to the binder in the composition being from 30 to 70% by volume of the former and from 70 to 30% by volume of the latter. **Sintering is a process of heating to bind powdered components together to yield a solid.** The sinterable powder is a powder of at least one selected from pure iron, stainless steel, carbonyl iron and pure cobalt. Achikita et al. has been cited for teaching "that powders generally have the claimed size" (page 5, lines 5-6 of the June 23, 2005 Office Action). **Whether Achikita's powder size is appropriate for sintering (joining particles together through heating) to yield a finished product is immaterial to the size of powder to be used as an abrasive composition for grinding.**

Sridhar is directed to **corrosion-resistant and wear-resistant duplex stainless steel** consisting of about 5 to 60% ferrite and the balance consisting essentially of austenite comprising, in weight percent, less than 0.1 carbon, 6 to 16 cobalt, 16 to 26 chromium, 7 to 20 nickel, 3 to 6 silicon, up to 4 molybdenum, up to 3 copper, less than 0.4 nitrogen, and balance iron plus impurities, wherein the ratio of cobalt to silicon is between 1 and 4.5 to provide a desirable combination of wear- and

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corrosion-resistance. Galling resistance was measured for various cobalt-containing alloys utilizing a cylindrical pin rotated under pressure against an alloy sample block ten times through an angle of 120 degrees and analyzing the surface with a profilometer to obtain a galling resistance by comparison against a threshold load at which maximum galling damage exceeds 10 microns, with higher galling resistance values indicative of greater wear resistance. Galling resistance values between 3000 and 9000 lbs were obtained for alloys according to the invention. Sridhar teaches using resulting alloys as hot and cold rolled thin sheet or tubing (col. 6, lines 3-12), castings, wrought products, welding material (e.g., wire), or sintered powder metallurgy products (claim 3), and/or structural fasteners such as nuts and bolts as used in chemical processing (Abstract). Impurities including titanium or aluminum may be present as residual elements. Sridhar, col. 2, lines 51-63. **Sridhar fails to teach or suggest any abrasive composition.**

The examiner acknowledges that Sridar "is not directed Applicants filed [sic – "Applicant's field" of endeavor" (February 3, 2006 Office Action, page 10), but posits that Sridars' teaching of aluminum as an impurity in stainless steel, such component is obvious in the steel according to Bergkvist. February 3, 2006 Office Action, page 10.

The examiner's reliance upon Sridhar to support the rejection of claims 1-8, 11 and 23-24 is improper, since **Sridhar is not analogous to the present invention**. According to the Federal Circuit, to serve as a proper reference to support a claim rejection, the reference **must either [1] be in the field of applicant's endeavor or, if not, then [2] be reasonably pertinent to the particular problem with which the inventor was concerned**. *In re Oetiker*, 24 U.S.P.Q.2d 1443, 1445 (Fed. Cir. 1992).

Under the *first prong* of the *Oetiker* test, Sridar is in the field of wear-resistant steel for finished articles, whereas the present invention is directed to abrasive metal powders – a different field of endeavor. There is no showing by the examiner that one skilled in the art of abrasive metal powders would look to wear-resistant finished articles as a source of art for materials research and development. Under the *second prong* of the *Oetiker* test, **intended use** is important in determining whether art is reasonably pertinent. MPEP 2173.05(g). **Sridhar fails both prongs of the *In re Oetiker* test.** A primary problem addressed by the present invention is providing abrasives adapted to grind a workpiece rapidly and in a manner that achieves high quality and high yields.

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Application, page 8, lines 10-12. The particular problem addressed by Sridhar is providing stainless steel having enhanced wear resistance, enhanced corrosion resistance, high ductility, and low cost. Sridhar, col. 1, lines 32-36; col. 1, line 64 – col. 2, line 20. The **intended use** of the Sridhar steel is **for finished articles suitable for use in chemical processing service, to resist corrosion and wear.** (Sridhar, col. 1, lines 12-20 & Abstract).

Thus, in multiple respects, Sridhar is directed to the exact **opposite of the present invention**. Sridhar is directed to **finished articles**; the present invention is directed to **abrasive powders**. Sridhar's finished articles are specifically adapted to **resist surface wear**, whereas the present invention is directed to abrasives for **grinding away surface material**. Based on the non-analogous nature of the Sridhar reference and the teaching away from abrasive powders (*W.L. Gore & Associates, Inc. v. Garlock, Inc., supra*), it cannot support an obvious rejection pursuant to MPEP 2173.05(g) and *In re Oetiker, supra*.

Moreover, the lack of specificity of the rejection – namely, the lack of any “particular findings as to the reason the skilled artisan with no knowledge of the claimed invention would have selected [Sridhar] for combination in the manner claimed” (*In re Kotzab*, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed Cir. 2000)) – betrays yet another defect in the purported *prima facie* case of obviousness.

The examiner posits that “since Bergkvist teaches that impurities can be present, one skilled in the art would clearly known [sic – “know”] what this encompasses (what the impurities are) as evidence [sic – “evidenced”] by this secondary reference.” February 3, 2006 Office Action, page 10-11. The examiner's hindsight reconstruction (i.e., combining non-analogous references) ignores the **objective two part-test of In re Oetiker**, and is facially improper.

Sridhar further suggests high hardness values that would appear in excess of the intermediate 110-340 HVM hardness range specified in claims 1-8, 11 and 23-24. As noted in the present application, **abrasives having hardness values either too low or too high provide poor results** – either in the form of poor grinding power, or excessive grinding power that can lead to damage. Application, page 7, lines 11-12 and page 9, lines 19-20. Sridhar speaks to the desirability of tailoring cobalt and silicon contents to enhance galling wear resistance (Sridhar, col. 5, lines 1-10),

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presumably to very high values to attain "maximum galling resistance." See, e.g., Sridhar, col. 5, lines 36-41 (further referring to "the presence of cobalt, about 12%, and silicon, about 4.5% [being] essential for the *highest degree of galling resistance*.")

Even if it were proper to premise an obviousness rejection in part on Sridhar (which it is not for the reasons provided immediately above), a combination of Bergkvist, Achikita, and Sridhar would still fail to teach all of the limitations of claims 1-8, 11 and 23-24. These claims require, *inter alia*, not only the specified abrasive powder composition, but also that the abrasive meets all of the following conditions: (1) its true specific gravity is 4 g/cm<sup>3</sup> or more; (2) its average particle diameter is from 5 µm to 50 µm inclusive; (3) its maximum particle size is 100 µm or less; and (4) its hardness (HMV) is from 110 to 340 inclusive. The Examiner points to no specific teaching in any Bergkvist, Achikita, and Sridhar teaching all of the enumerated specific gravity range, the enumerated average particle diameter range, the enumerated maximum particle size threshold, and the enumerated hardness range.

To support a rejection under 35 USC § 103, the prior art reference(s) must teach all of the limitations of the claims. M.P.E.P. § 2143.03. Even if the improper combination of Bergkvist, Achikita, and Sridhar were proper (which it is not), the combination fails to teach all of the claimed limitations, as it contains no derivative basis for all of the limitations of applicants' claimed invention as recited in claim 1, from which claims 2-8 and 11 depend, and as analogously recited in claims 23 and 24.

- i) *Rejection of claims 9-10 under 35 USC § 103(a) as obvious over Bergkvist in view of Sridhar et al. and Achikita et al. as applied to claim 1 and further in view of DE 19815087 and at least one of (1) JP 2002-256255, (2) JP 2001-009727, or (3) Kydd*

Bergkvist, Sridhar, and Achikita have been discussed hereinabove, both individually and in combination. The previous discussion of these references and the combination is incorporated by reference as to the present rejection of claims 9-10. Sridhar constitutes **non-analogous art** that is not properly cited against any of the pending patent claims, including claims 9-10. The examiner has acknowledged that Bergkvist "does not make **any mention of boron or aluminum** (titanium can be present in an amount of 0-2%) in the stainless steel," Bergkvist's compositions are expressly stated to be **low silicon** (less than about 0.5% Si) in character, and Achikita et al.'s boric acid ester

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is an **organic** boron compound (as compared to the *inorganic* metal required by claims 1-11, 23, and 24.

The reference JP2002-256255 describes a coagulation- and agglomeration-resistant polishing material that overcomes water-related problems, in which surfaces of spherical inorganic particles are treated with a water-repellency-imparting substance. JP2002-256255 has been cited as teaching an abrasive comprising stainless steel that can have the claimed size, in which the abrasive is surface treated with a material that provides water resistance (page 7, lines 16-20 of the June 23, 2005 Office Action). The examiner has acknowledged that JP2002-256255 “**does not make any mention of boron, aluminum or titanium** in the stainless steel,” and as previously noted the examiner has acknowledged that Bergkvist “does not make any mention of boron or aluminum (titanium can be present in an amount of 0-2%) in the stainless steel,” it being additionally noted that Bergkvist’s compositions are expressly stated to be **low silicon, less than about 0.5% Si**.

The reference JP2001-0009727 describes an abrasive blasting composition composed of inorganic particle powder and meeting all the following conditions (1) to (5):

- (1)  $10 \leq A \leq 0.8C$
- (2)  $0.03C \leq B \leq 0.5 C$
- (3)  $40 \leq C \leq 500$
- (4)  $30 \leq D \leq 95$
- (5)  $E_2 - 3.5 \leq E_1 \leq E_2 - 0.5$

wherein:

- A: maximum particle size ( $\mu\text{m}$ ) of the abrasive
- B: average particle diameter ( $\mu\text{m}$ ) of the abrasive
- C: partition with  $d_1$  + ground groove width  $d_2$  ( $\mu\text{m}$ ) at processing pitch
- D: an index (%) representing indeterminate forms of particles and indicating an area ratio of a particle projected area to a circumcircle
- $E_1$ : Mohs hardness of the abrasive
- $E_2$ : lower Mohs hardness of either the substrate or an electrode

JP2001-0009727 discloses that the abrasive can be any inorganic particle powder, natural or synthetic, e.g., natural inorganic particle powders such as limestone, barite and gypsum, and synthetic inorganic particle powders such as calcium carbonate, barium sulfate and calcium sulfate. JP2001-0009727 has been cited as teaching an abrasive that can have the claimed size and comprises a material having a Mohs hardness defined by sections [0026]-[0027] of the

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reference, in which the abrasive is surface treated with a material that provides water resistance in an amount of 0.01-5%. However, JP2001-0009727 fails to disclose or suggest boron, aluminum, or titanium in an abrasive composition.

Kydd discloses a mixture of metal powders and metallo-organic decomposition (MOD) compounds in an organic liquid vehicle. The metal can be any of copper, silver, gold, zinc, cadmium, palladium, iridium, ruthenium, osmium, rhodium, platinum, iron, cobalt and nickel, (Groups Ib, IIb and VIII), and indium, tin, antimony, lead and bismuth. Kydd has been cited for teaching at column 8, line 66-column 9, line 6 of surface treating metal particles with stearic acid in order to prevent agglomeration (page 12, lines 8-11 of the June 23, 2005 Office Action). Kydd's organic vehicle/organometal/metal compositions are not in any way disclosive or suggestive of applicant's claimed invention of "[a]n abrasive composed of an inorganic metal powder that contains at least one of boron, aluminum and titanium," as recited in claim 1, and therefore likewise required in claims 9 and 10, each of which depends from claim 1.

As noted previously, to support a rejection under 35 USC § 103, **the prior art reference(s) must teach all of the limitations of the claims.** M.P.E.P. § 2143.03. Even if the inclusion of Sridhar within the combination of were proper (which it is not), the combination of Bergkvist, Sridhar, and Achikita further in view of DE 19815087 and at least one of (1) JP 2002-256255, (2) JP 2001-009727, or (3) Kydd, fails to teach all of the claimed limitations, as it contains no derivative basis for all of the limitations of applicants' claimed invention as recited in claim 1, from which claims 9-10 depend.

Since any combination of Bergkvist, Sridhar, and Achikita further in view of DE 19815087 and at least one of (1) JP 2002-256255, (2) JP 2001-009727, or (3) Kydd fails to teach all of the limitations of claims 9 and 10, the obviousness rejection under 103(a) cannot stand. Withdrawal of the rejection is respectfully requested.



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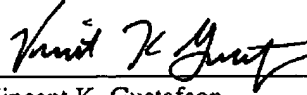
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CONCLUSION

Based on the foregoing, claims 1-11, 23 and 24 are fully patentable over the references, and otherwise in form and condition for allowance.

Respectfully submitted,



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**Enclosures:**

**Request for Continued Examination Transmittal [1 pg]**  
**Supplemental Information Disclosure Statement [2 pgs]**  
**Form PTO/SB/08A [1 pg]**  
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